

# Bypass versus Pass-Through

## Canadian and British Case Studies

Regional Workshop on Context Sensitive Design

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# Presentation Overview

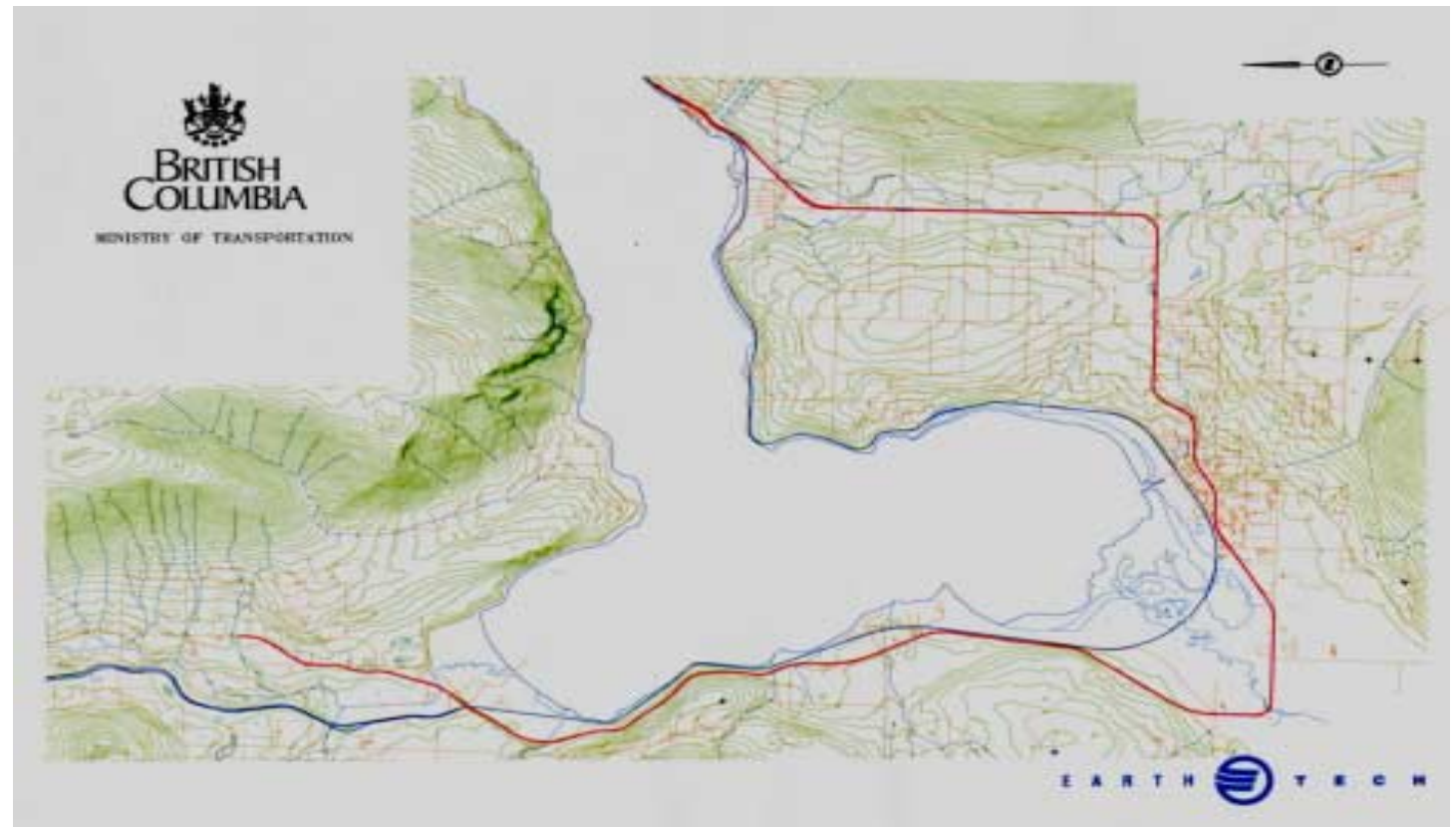
- Describes the planning process used on a recent bypass versus pass-through study undertaken on the Trans Canada Highway in British Columbia.
- Describes the recent implementation of a city-wide traffic scheme undertaken in Gloucester, UK.
- Summarizes lessons learned for CSD.



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# Trans Canada Highway through Salmon Arm, BC





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# Trans Canada Highway through Salmon Arm, BC



## Existing Conditions

- 2 and 4 lane rural and urban highway, 29 km total length, approximately 3 km urban.
- 15,000 AADT, 17,700 SADT through urban section.
- Six signalized intersections in urban section.
- Salmon Arm population 16,250, with trading area of 40,000.

## Symptoms

- Higher than average accident rate on both rural and urban sections.
- Average travel speeds through urban section less than 70 km/h goal.
- Conflicts between through traffic and local traffic and pedestrians.



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## The Context Sensitive Design Approach

Developed an understanding of often conflicting requirements for safety, mobility, community and environmental goals by:

- Including designers, traffic engineers, fisheries, agricultural, wildlife, First Nations and geotechnical consultants on the Project Team.
- Creating a “Sounding Board”, comprised of representatives from Council, the Business Community and First Nations. Two workshops were held with round table review and discussion of options developed.
- Considering all modes of travel in the planning process, with particular consideration for pedestrian crossing opportunities in the urban core.
- Developing design standards based on a combination of ambient, federal, provincial and city standards and guidelines where appropriate.



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# Trans Canada Highway through Salmon Arm, BC



## 3 Options Developed:

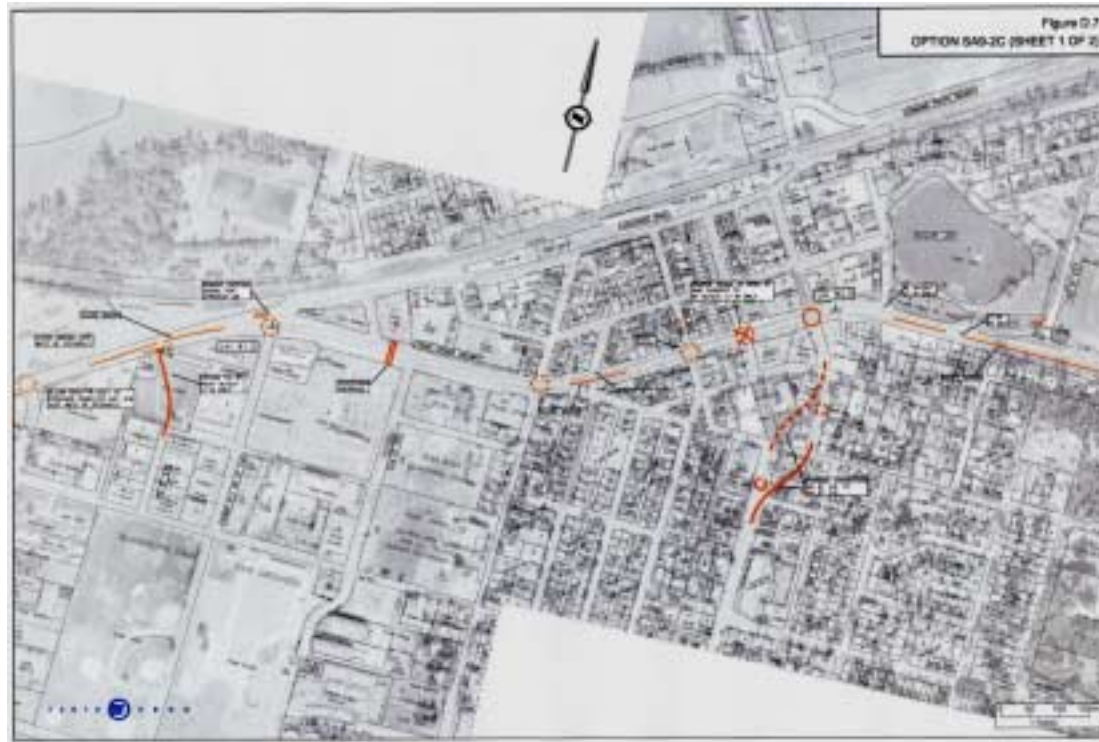
- Improve existing 4-lane highway through town.
- Construct one-way couplet system through the urban core.
- Construct bypass.





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**4-lane the rural  
sections and  
improve  
existing 4-lane  
through town.**

#### **Urban Features:**

- Intersection modifications.
- Change one-way street direction.
- Remove signals at one intersection and add new signals, for a total of 9 signals.
- Access management.

#### **Expected Results:**

- Average travel speed in 2021 would be similar to existing 1998 speeds (approximately 55 to 57 km/h).
- Significant side street queues in peak hour.

#### **Cost**

- Total project: \$99.6M, downtown urban section \$6.15M.





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**4-lane the rural  
sections and  
construct  
couplet through  
urban core.**

#### **Urban Features:**

- Improvements to shoulder sections.
- Construction of couplet through urban core.
- Total of 9 signals in each direction.
- Street closures.

#### **Expected Results:**

- Average travel speed in 2021 would be approximately 4% higher than existing conditions.
- Lowest average maximum queues on side streets in peak hour, but double existing queues.
- Improved pedestrian crossing opportunities.

#### **Cost**

- Total project: \$109.4M, downtown urban section \$17.8M.



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**Construct  
bypass.**

#### Features:

- Two lane 100 km/h rural arterial bypass around Salmon Arm.
- Interchanges constructed at each end to connect existing TCH.
- 1.7 km long crossing of Shuswap Lake, two lanes with 2.0 m shoulders and sidewalk on one side.

#### Expected Results:

- Average travel speed in 2021 would be approximately 89 km/h (performance goal for rural sections 90Km/h).
- Time savings of approximately 15 minutes for through traffic.
- Expected to attract approximately 63% of through traffic, but only 20 to 30% of overall traffic.

#### Cost

- Total project: \$181.4 to \$202.2M excluding improvements to existing corridor.



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# Trans Canada Highway through Salmon Arm, BC

## Conclusions:

1. The bypass is the preferred long term option as it significantly reduces travel time and would reduce truck traffic through Salmon Arm. However, the need for a bypass is beyond the planning horizon for the TCH corridor.
2. The preferred short to medium term option through Salmon Arm is “*do nothing*”.
3. The preferred “on-line” option is to develop the couplet.



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# The Safer City Project Gloucester, England

## Background

A \$12 (CDN) national demonstration project that saved around 100 people from death and injury on roads in Gloucester each year by:

- Safer Planning;
- Putting traffic onto safer roads;
- Treating area wide safety problems, not isolated ones; and
- Reducing the speed of traffic.



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## Britain : Reclaiming the Street

### Environment:

- An old road in the City Centre of Gloucester, England.
- 8,000 vehicles, 20,000 pedestrians per day.
- Mainly retail environment.



### Symptoms:

- Pedestrian fatalities and injuries.
- Traffic dominating the street, adversely affecting economy.
- Highest levels of nitrogen oxide and benzene in the city.





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## Britain: Reclaiming the Street



### Results:

- Street was pedestrianized;
- Gloucester moved up the rankings in retail sales turnover;
- Crash record reduced across network. In this street only 1 injury per year compared to 8 per year before; and
- Air quality improved.





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# Britain: Reducing Dominance of the Car yet Allowing Pass Through

## Environment:

- Ribbon development of small independent shops.
- 12,000 vehicles a day, traffic congestion.
- Schools and residential neighbourhood, narrow sidewalks.
- Busy bus corridor (1 bus every 2 minutes).



## Symptoms:

- 30 Injuries (mostly vulnerable road users) in 3 year period.
- High vehicle emissions, poor air quality.
- Buses caught in the same line as cars; 40% of cars in the street were passing through.
- Shops were struggling to attract customers – many vacant shops.



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# Britain: Reducing the Dominance of the Car yet Allowing Pass-Through

## Planning for Change:

- Business operators wanted extra parking areas, not other improvements:
  - The street is too narrow to allow on-street parking.
  - This shopping street is for local people, not to attract customers from other parts of the city.
  - Concerned that this would increase motor traffic in the street.
- Business operators' belief that passing traffic brings increased customers was overstated:
  - 75% of people in the street had arrived on foot.
  - 17% of people in the street had arrived by car.
  - 5% cycled, 8% arrived by bus.



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## Britain: Reducing the Dominance of the Car yet Allowing Pass-Through

**A Citizens' Jury comprised of local residents was formed to identify and seek agreement for a solution.**



- The Citizens' Jury listened to evidence from business owners/operators, staff and council, transit, pedestrians, air quality scientists, and retail developers.
- The Citizens' Jury presented their verdict and decided proposals. This was then tested in the community by mail-outs and questionnaires.



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## Britain: Reducing the Dominance of the Car yet Allowing Pass-Through



### Improvement Measures

- Wider, obstruction free sidewalks and new crosswalks (narrower curb to curb width);
- 20 mph speed limit;
- New shopfronts and special paving materials; and
- New “white” streetlighting.



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## Britain: Reducing the Dominance of the Car yet Allowing Pass-Through



### Results

- Increased pedestrian safety;
- Volumes fell from 12,000 to 8,000 a day (10% passing through);
- Air Quality improved; and
- Number of vacant shops were reduced.



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## Lessons Learned

### ***Canadian Experience:***

- CSD is an essential part of the functional planning process.
- Decisions are not easy because of the cost of bypassing versus upgrading existing roads through towns.

### ***UK Experience:***

- A CSD approach has been successfully implemented on both pass-through and bypass projects.